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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,078	10/28/2003	Abderrhamane Ounadjela	60.1543	4157

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SCHLUMBERGER-DOLL RESEARCH  
ATTN: INTELLECTUAL PROPERTY LAW DEPARTMENT  
P.O. BOX 425045  
CAMBRIDGE, MA 02142

EXAMINER
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PHILLIPS, FORREST M

ART UNIT	PAPER NUMBER
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2837

MAIL DATE	DELIVERY MODE
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01/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/695,078

Applicant(s)

OUNADJELA, ABDERRHAMANE

Examiner

Forrest M. Phillips

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 4) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 12-24, 27-36 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelminski (US4712641) in view of Mallet et al (US4700803).

With respect to claim 1 Chelminski discloses an acoustic source for generating elastic waves through an earth formation comprising: a first reaction mass (118 in figure 9) positioned along an axis and a pad (30 in figure 9) wherein the pad is connected with the earth formation, and said first reaction mass using a plurality of variable angle pushing rods (22 in figure 8 only one shown described in column 5 lines 14-16 as including a plurality) so that said pads generate elastic waves through said earth formation upon activation of said reaction mass as a result of impact of the pads against the formation; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods.

Chelminski does not disclose a borehole source, that the waves are created via a wall, or that the reaction masses are motorized.

Mallet discloses a plurality of motorized reaction masses acting through pads (48 in figure 3 for example) to strike the wall of a formation and pass energy therethrough.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use motorized reaction masses and a plurality of pads in a downhole source so as to produce waves in all directions away from the borehole with the teachings of Chelminski to use a reaction mass striking a variable angle pushing rod and passing energy through a pad.

The motivation for doing so would be that motorized components can be easily repeated with no working fluid involved and that variable angle pushing mechanisms allow for the control of the direction of wave propagation.

With respect to claims 2-3 Mallet further discloses anchoring means to anchor said sonde in said borehole, and said means are at least two of the pads (It can be seen from figure 2 and the disclosure of Column 4, lines 45-50, that one of ordinary skill in the art would appreciate the anchoring means of non actuation of the plates in a position to center the sonde.).

With respect to claim 4 Mallet further discloses further comprising a receiver array positioned along said sonde for receiving said elastic waves after said elastic waves have passed through a position of said formation (see figure 1, data recorder).

With respect to claim 5 Chelminski further discloses wherein said plurality of pushing rods (22) are hingedly connected to the first reaction mass and the pads (see figure 9).

With respect to claims 6 and 7 While not explicitly stated it would have been an obvious matter of design choice to select a weight, and stiffness of the reaction mass according to a specified source property.

With respect to claim 8 Chelminski discloses an acoustic source for generating elastic waves through an earth formation comprising: a first reaction mass (118 in figure 9) positioned along an axis and a pad (30 in figure 9) wherein the pad is connected with the earth formation, and said first reaction mass using a plurality of variable angle pushing rods (22 in figure 8 only one shown described in column 5 lines 14-16 as including a plurality) so that said pads generate elastic waves through said earth formation upon activation of said reaction mass as a result of impact of the pads against the formation; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods.

Chelminski does not disclose a borehole source, that the waves are created via a wall, a second reaction mass or that the reaction masses are motorized.

Mallet discloses a plurality of motorized reaction masses acting through pads (48 in figure 3 for example) to strike the wall of a formation and pass energy therethrough.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use motorized reaction masses and a plurality of pads in a downhole source so as to produce waves in all directions away from the borehole with the teachings of Chelminski to use a reaction mass striking a variable angle pushing rod and passing energy through a pad.

The motivation for doing so would be that motorized components can be easily repeated with no working fluid involved and that variable angle pushing mechanisms allow for the control of the direction of wave propagation.

With respect to claim 9 Chelminsk as modified discloses (see figure 9 and discussion of Mallet teaching multiple pads and reaction masses) each mass being connected to each pad using pushing rods such that said pads move at an angle relative to said axis.

With respect to claims 12 and 13 Mallet further discloses anchoring means to anchor said sonde in said borehole, and said means are at least two of the pads (It can be seen from figure 2 and the disclosure of Column 4, lines 45-50, that one of ordinary skill in the art would appreciate the anchoring means of non actuation of the plates in a position to center the sonde.).

With respect to claim 14 Mallet further discloses further comprising a receiver array positioned along said sonde for receiving said elastic waves after said elastic waves have passed through a portion of said formation (see figure 1, data recorder).

With respect to claim 15 Chelminski further discloses wherein said plurality of pushing rods (22) are hingedly connected to the first reaction mass and the pads (see figure 9).

With respect to claims 16 and 17 While not explicitly stated it would have been an obvious matter of design choice to select a weight, and stiffness of the reaction mass according to a specified source property.

With respect to claim 18 Chelminski discloses an acoustic source for generating elastic waves through an earth formation comprising: a first reaction mass (118 in figure 9) positioned along an axis and a pad (30 in figure 9) wherein the pad is connected with the earth formation, and said first reaction mass using a plurality of variable angle

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pushing rods (22 in figure 8 only one shown described in column 5 lines 14-16 as including a plurality) so that said pads generate elastic waves through said earth formation upon activation of said reaction mass as a result of contact of the pads with the formation; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods.

Chelminski does not disclose a borehole source, that the waves are created via a wall, or that the reaction masses are motorized.

Mallet discloses a plurality of motorized reaction masses acting through pads (48 in figure 3 for example) to strike the wall of a formation and pass energy therethrough.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use motorized reaction masses and a plurality of pads in a downhole source so as to produce waves in all directions away from the borehole with the teachings of Chelminski to use a reaction mass striking a variable angle pushing rod and passing energy through a pad.

The motivation for doing so would be that motorized components can be easily repeated with no working fluid involved and that variable angle pushing mechanisms allow for the control of the direction of wave propagation.

With respect to claim 19 Mallet further discloses further comprising a receiver array positioned along said sonde for receiving said elastic waves after said elastic waves have passed through a portion of said formation (see figure 1, data recorder).

With respect to claim 20 Chelminski further discloses wherein said plurality of pushing rods (22) are hingedly connected to the first reaction mass and the pads (see figure 9).

With respect to claims 21 and 22 While not explicitly stated it would have been an obvious matter of design choice to select a weight, and stiffness of the reaction mass according to a specified source property.

With respect to claim 23 Chelminski discloses an acoustic source for generating elastic waves through an earth formation comprising: a first reaction mass (118 in figure 9) positioned along an axis and a pad (30 in figure 9) wherein the pad is connected with the earth formation, and said first reaction mass using a plurality of variable angle pushing rods (22 in figure 8 only one shown described in column 5 lines 14-16 as including a plurality) so that said pads generate elastic waves through said earth formation upon activation of said reaction mass as a result of contact of the pads with the formation; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods.

Chelminski does not disclose a borehole source, that the waves are created via a wall, a second reaction mass or that the reaction masses are motorized.

Mallet discloses a plurality of motorized reaction masses acting through pads (48 in figure 3 for example) to strike the wall of a formation and pass energy therethrough.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use motorized reaction masses and a plurality of pads in a downhole source so as to produce waves in all directions away



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from the borehole with the teachings of Chelminski to use a reaction mass striking a variable angle pushing rod and passing energy through a pad.

The motivation for doing so would be that motorized components can be easily repeated with no working fluid involved and that variable angle pushing mechanisms allow for the control of the direction of wave propagation.

With respect to claim 24 Chelminski as modified discloses (see figure 9 and discussion of Mallet teaching multiple pads and reaction masses) each mass being connected to each pad using pushing rods such that said pads move at an angle relative to said axis.

With respect to claim 27 Mallet further discloses further comprising a receiver array positioned along said sonde for receiving said elastic waves after said elastic waves have passed through a portion of said formation (see figure 1, data recorder).

With respect to claim 28 Chelminski further discloses wherein said plurality of pushing rods (22) are hingedly connected to the first reaction mass and the pads (see figure 9).

With respect to claims 29-30 While not explicitly stated it would have been an obvious matter of design choice to select a weight, and stiffness of the reaction mass according to a specified source property.

With respect to claims 31-36, 41-44, Examiner considers the method claims to have been necessitated by the product structure.

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Claims 10, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelminski in view of Mallet as applied to claims 1 and 12 above, and further in view of Paulsson (US4715470).

With respect to claims 10 and 25 Chelminski as modified discloses the invention as claimed except further comprising a compression spring connecting said first and second motorized reaction masses.

Paulson discloses the use of a compression spring (346 in figure 6) between reaction masses.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Paulson to use compression springs between reaction masses with the tool of Chelminski as modified.

The motivation for doing so would have been to neutralize the weight of the masses effect on each other (refer to Column 6 lines 28-29).

Claims 11, 26 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelminksi in view of Mallet as applied to claim1 above, and further in view of Brett et al (US5309405)

With respect to claims 11 and 26 Chelminski as modified discloses the invention as claimed except for third and fourth masses and the common connection between reaction masses and the pads.

Brett discloses (figure 40) the use of multiple reaction masses, connected to one another in series striking the wall of a borehole (12a-c).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Brett to have multiple masses in linear series striking the wall with the teachings of Chelminksi as modified, and have the push rods connecting the masses in such a manner as to allow for series striking of the wall.

The motivation for doing so would be to allow for a delayed striking of the various masses to create a more complex vibrational energy pattern (see Column 9 lines 1-3)

With respect to claims 37-40 Examiner considers the method step to be necessitated by the product structure.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to 892.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Forrest M. Phillips whose telephone number is 5712729020. The examiner can normally be reached on Monday through Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on 5712721988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FP

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER